



# **Educational Arts Team, Inc.**

*Transforming Children's Hearts & Minds through the Arts*

## **Student Performance and the Arts: How EAT's Arts Infusion Project has Positively Impacted Student Achievement in Jersey City**



*The Educational Arts Team  
Theater Infusion Project  
February 2008*

## Introduction

In 2005, The Jersey City Board of Education Visual and Performing Arts Department In partnership with the Education Arts Team (EAT) a non-profit organization in New Jersey received a federal grant to infuse theatre arts strategies into the language arts and social studies curriculum in grades 4 and 5.

Seven schools in the Jersey City Public School District were involved in the project: PS# 8, 11, 12, 20, 23, 27 & 34. Twenty-eight randomly selected fourth and fifth grade teachers from these schools were assigned to the project. Another twenty-eight teachers served as controls.

During the first two years of the grant, EAT worked on developing forty lesson plans in language arts and social studies that incorporated creative drama, theater games, puppetry, and process drama strategies. These lesson plans were implemented by teaching artists in the classrooms of the 28 teachers who were randomly assigned to the project.

This report presents findings on the impact of the Arts Infusion Project on student achievement. The report answers the following questions:

- ◆ Did the Arts Infusion Project influence how well students performed on New Jersey State Assessments?
- ◆ How did the Project affect the performance of special populations (classified students, bilingual students and low SES students)?
- ◆ Did students in the project show improvement in pro-cognitive skills and behaviors that promote student learning?
- ◆ Is there evidence that students have improved in the pro-social domains?



## EAT's Lesson Plans in Social Studies and Language Arts

During the project, a handbook of over 40 lesson plans that are divided into nine units was created. The first four units were implemented with fourth graders; the last five units with fifth graders.

### Fourth Grade Units

In Unit one, Story Making, the teaching artists use mime, puppetry and improvisation to engage students in wordplay and sentence construction. These activities lead to stories created and performed by the students.

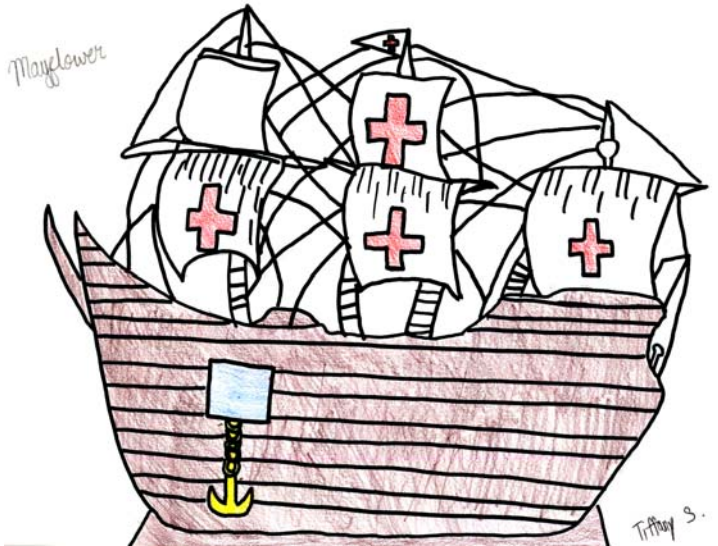
Unit two uses role drama to examine varied perspectives and conflicts during critical moments in American Colonial history, including the landing of the Mayflower and how the American Revolution affected colonial relationships, native tribes, and African-American slaves.

Unit three give students the opportunity to co-create a story based on the book *Basket Moon*. The lessons develop an awareness and appreciation of the value of tradition and family expressed so well in the original story.

In Unit four, students learn three tales of the Leni Lenape; the native tribe who inhabited what is now New Jersey in the 16th century. Two of these stories are developed by the student into puppet scripts and presentations.

### Fifth Grade Units

In Unit five, students hear a tall tale, enjoy a series of storytelling games, create a fictional character, and write their own tall tale.



Unit six explores the lives and culture of the ancient Egyptians by examining tomb paintings and creating a drama based on an incident that took place in the 12th century B.C.

In Unit seven, students are introduced to the world of ancient Greek mythology by learning the related stories of “Prometheus the Bringer of Fire” and “Pandora's Box.” Through improvisation and the writing of scripts, students reflect upon the idea of the “spark” of the imagination, the price of technological progress and the question of suffering in the world.

Unit eight uses role drama and a series of writing exercises to create a story based on the fairytale, Rumpelstiltskin. Students take on the role of advisors to the queen and analyze characters, debate points of view, and create their own ending to the story.

In Unit nine, students develop scripts and present scenes, as they examine the national epic of the ancient Roman Empire, the Aeneid by the poet Virgil.

## Overview of EAT's Teaching Artists' Classroom Instruction

Five teaching artists were involved in this project. Four of them each did two units: one with the fourth grade and one with the fifth. The fifth artist worked with only fifth graders on one of the units. The nine units consisted of either four or five lessons, each lesson lasting approximately 50 minutes. Teachers were encouraged to participate in the lessons. Some did, while others simply watched.

Initially teachers were leery of the fact that the EAT would be taking up too much classroom time. However, as the first year progressed many teachers wondered why EAT was limited to only 20 lesson plans and could not work with their class each week.

Students were very receptive to the lessons and were usually disappointed when the teaching artists announced that they had completed the unit and would not be returning.

Artists worked in collaboration with the Project Manager to develop each unit. Project manager met with the teaching artists as a group on a weekly basis to review the progress of the classes and the development of lesson plans.

During year one the project manager, teaching artists and the 28 classroom teachers met five times to discuss the overall design of the project, the needs of the students, what curriculum was being covered at various points during the year and the particular strategies that the teaching artists planned to employ. These five meetings help the teaching artists in the revision of the lesson plans based on feedback received from the teachers.

During year two the project manager facilitated two six hour trainings for the classroom teachers and teaching artists. The educational goals of the project were reviewed; the facilitator led the group in a series of art and drama strategies. Teaching artists had the opportunity to share and explain activities from the lesson plans that they were using in the classroom. The classroom teachers were encouraged to adapt some of these drama and art strategies for their own use in the classroom.

During year three the project manager facilitated two three hour trainings for all of the fourth and fifth grade classroom teachers in the Jersey City Public School District. These workshops gave teachers a chance to experience the art and drama strategies EAT had employed in the classroom. Additionally, teachers worked in small groups of four or five to develop their own lesson plans based on strategies they had experienced during the first two hours of training. Teacher feedback from the training was very positive. As a follow-up, the teaching artists demonstrated two lessons from the handbook in each of their classrooms.



**These workshop gave teachers a chance to experience the art and drama strategies EAT had employed in the classroom. Additionally, teachers worked in small groups of four or five to develop their own lesson plans based on strategies they had experienced.**



## Evaluation Design

### Evaluation Sample

The Arts Infusion Project was based on a randomized treatment/control design, in which 28 classrooms in seven schools were randomly assigned to be part of the project; and 28 classrooms in the same schools were randomly chosen to serve as a control group. A total of 1026 students were included in the evaluation sample. The number of students in the treatment group was 505; and in the control group 521. Approximately 456 students who were non-classified were in the fourth grade and 457 in the fifth grade. The number of classified special education students who were part of the evaluation sample was 96; while the number of students in the evaluation sample who were receiving bilingual services was 83.



### Indices of Student Performance

Determination of the effects of the Arts Infusion Project's impact on student performance was based on several indicators.

- ◆ First, success in meeting the state standards in language arts was measured by student performance in 2007 on the New Jersey Assessment of Skills and Knowledge, as well as first and fourth marking period grades for the academic year.
- ◆ Second, progress in social studies performance was determined by examining the first and fourth marking period grades earned. (This content area is not assessed by the state tests).
- ◆ Third, student's pro-cognitive development was measured by teacher assessment of improvement in turning in homework in on time; completion of homework in a satisfactory manner, participation in class, attentiveness in class, time-on-task, motivation to learn, and volunteering in class.
- ◆ Fourth, the pro-social growth was assessed by examining data on attendance, suspension, getting along with other students, tardiness and in-class behaviors.

### Data Analysis

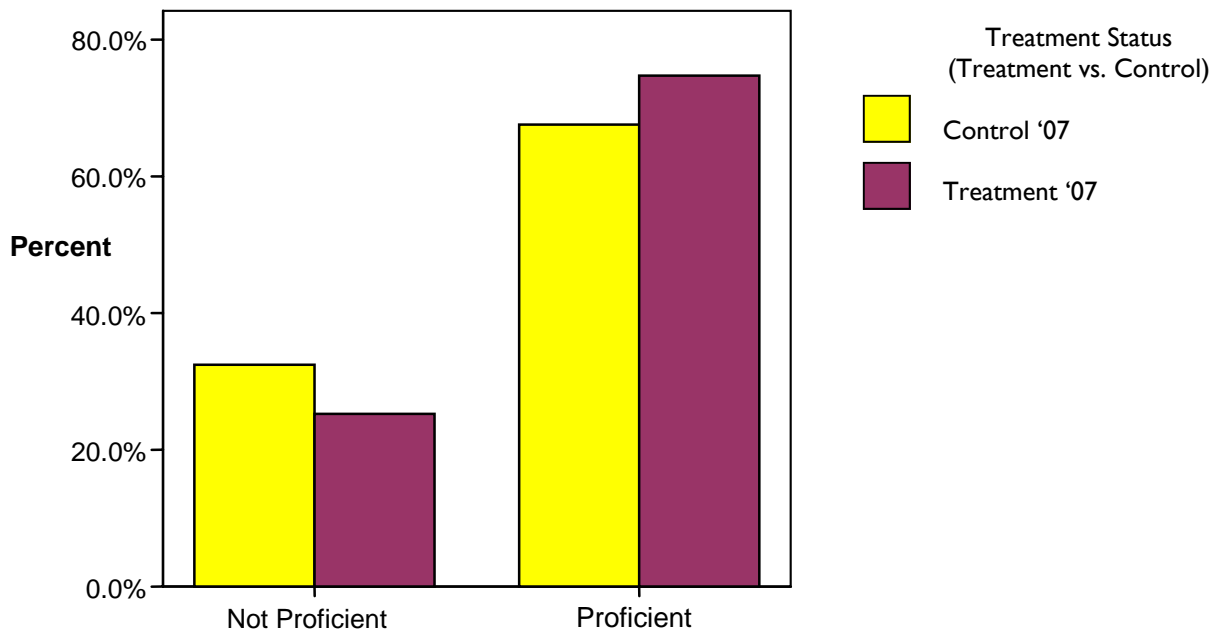
Logistic regression was used to test whether differences in passing rates on the NJASK 4 & 5 varied significantly for students in the Arts Infusion Project and those who were not in the project. Chi Square analyses were employed in order to determine whether significant differences in marking period grades were evident between the Arts Infusion students and the control students; and whether there were also differences in improvement levels for the pro-cognitive domains for both groups of students.

## Findings

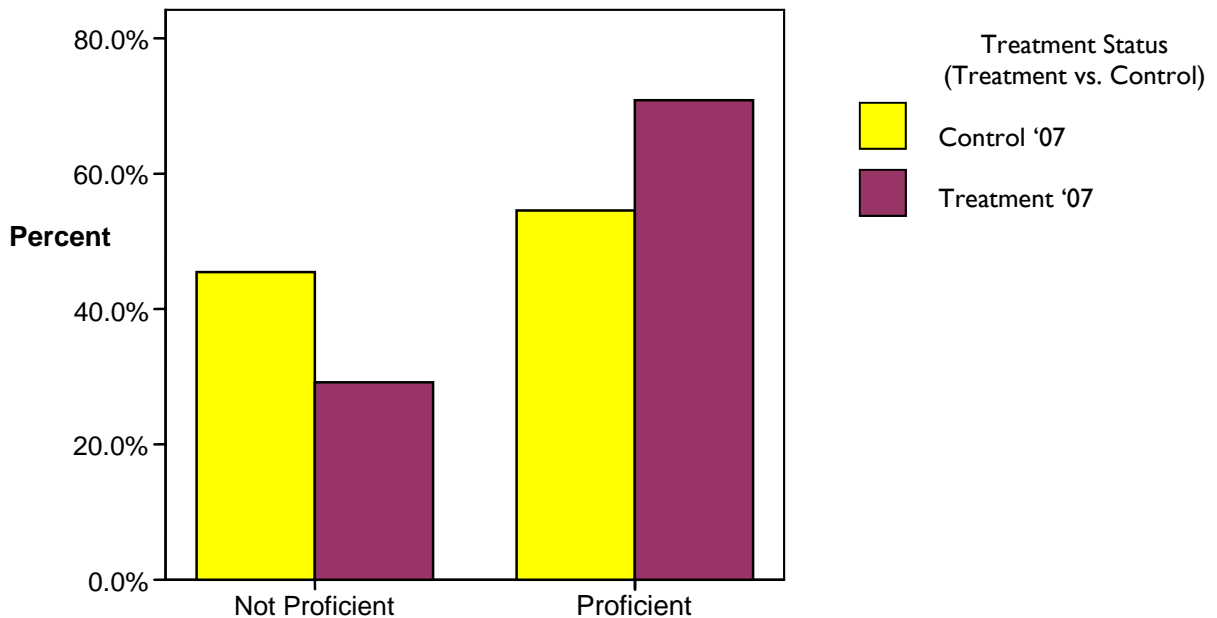
### Performance on NJASK Language Arts Test

Students who were in the Arts Infusion Project were more likely to be proficient in language arts than students who were not in the project. Approximately 75% of students in the Arts Infusion Project were proficient in language arts in comparison to 68% of students who were in the control group (Refer to Figure 1). These findings are statistically significant and suggests that the odds of passing the state assessment in language arts increases for a student, if he or she participates in the Arts Infusion Project (Exp (B) = 1.421). The odds are even greater for students who were in the fourth grade (Exp (B) =2.024). For a fourth grader the odds of passing NJASK were likely to increase by a factor of 2.024 if that fourth grader was in the Arts Infusion Project (See Figure 2).

*Figure 1: Comparison of Performance on NJASK between Arts Infusion Students and Control Group Students (All Students)*



*Figure 2: Comparison of Fourth Graders' Performance on NJASK4*



**Approximately 90% of fifth grade students who were in the Arts Infusion Project in the fourth and fifth grades passed the language arts section of NJASK 5. Only 71% of students who were never exposed to the Arts Infusion Project were proficient in NJASK language arts testing.**

Findings on fifth grade students' performance on NJASK5 were slightly more complicated than what was observed at the fourth grade. Fifth graders fell into one of four categories as can be seen in Figure 3:

- (1) Students who were part of the Infusion Project both as fourth graders and as fifth graders (coded red) were exposed to the Arts Infusion Project for two consecutive years;
- (2) Students who were never exposed in either the fourth or fifth grade to the project (coded green);
- (3) Fifth grade students who were not in the Arts Infusion Project as fifth graders, but who were part of the project when they were fourth graders (coded brown); while these students were part of the intervention as fourth graders in moving to the fifth

grade they ended up in classrooms that were not part of the project;

- (4) Fifth graders who were previously not part of the Arts Infusion Project as fourth graders but who were currently in the project as fifth graders (coded purple).

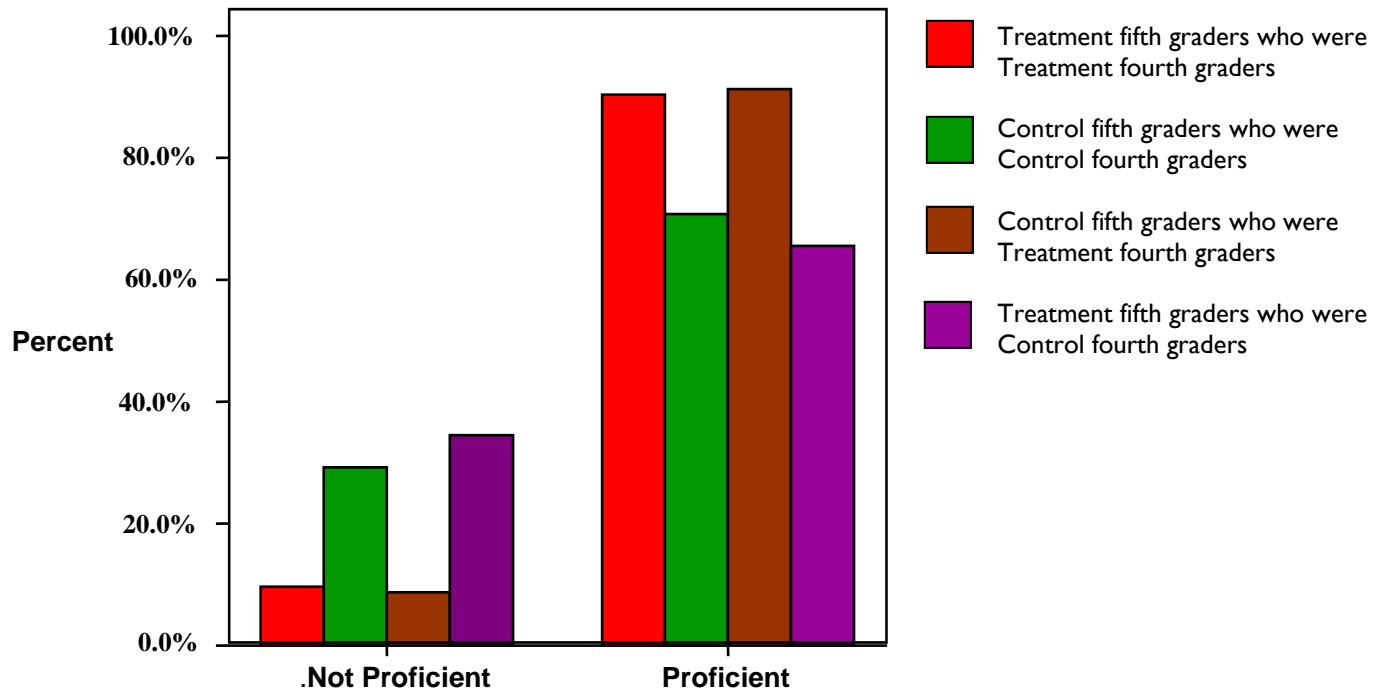
As can be seen from the Figure 3, approximately 90% of fifth grade students who were in the Arts Infusion Project in the fourth and fifth grades passed the language arts section of NJASK 5. Similarly, approximately 91% of fifth graders who were exposed to the Arts Infusion Project during the fourth grade but who were no longer in the project met the state standard for proficiency.

In contrast to these two groups; about 71% of students who were never exposed to the Arts Infusion Project were proficient in language arts; and 66% of fifth graders who were in the project in fifth grade, but were not in the fourth grade, were similarly successful on the NJASK5. These data suggest that exposure to the Arts Infusion Project as fourth graders had a significant impact on how successful students were on the state assessment in the fifth grade.

More importantly, exposure to the arts helped students to strengthen their academic competencies in language arts. For example, while approximately 17% of fifth grade students who were part of the Arts Infusion Project as fourth graders were advanced proficient in language arts, only 2% of fifth graders who were not in the Arts Infusion Project when they were in the fourth grade had performance levels that fell in the advance proficient category.

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Figure 3: Comparison of Performance on NJASK5 (Fifth Graders Only)



## Performance on NJASK by Special Populations

Data on the performance of special populations furnished in Table I indicate that students who were involved with the Arts Infusion Project were more likely to pass the state assessment in language arts, than students who were not involved. For example, the passing rate on NJASK for Arts Infusion special education students was 38% compared to only 26% for non-arts infusion special education students. Similarly, while 54% of bilingual students in the Arts Infusion Project were deemed to be proficient, only 51% of non-Arts Infusion bilingual students were considered to be so. Among low socio-economic students (students who qualify for free or reduced lunch), the percentage of Arts Infusion students who passed the language arts portion of NJASK was 73% in contrast to only 65% of non-Arts Infusion students.

Table I: Percentage of Students Proficient in Language Arts: Special Education, Bilingual and Low SES Students

Group	Special Education Students	Bilingual Students	Low Socio-Economic Status Students
Arts Infusion Students	38%	54%	73%
Students Not in the Arts Infusion Project	26%	51%	65%
Difference in Passing Rates	12%	3%	8%
Total Number of students	79	69	673



## Mastery of the Social Studies Curriculum

Marking period grades were used to determine how involvement in the Arts Infusion Project helped students to master social studies content.

In the fourth grade, 73% of students in the Arts Infusion Project earned a grade of B or higher for their fourth marking period grade, as compared to 65% of students who were in the control group (See Table 2).

Among fifth graders, students who were in the Arts Infusion Project as fourth graders, appeared to have attained a greater mastery of the fifth grade social studies content, than students who were not exposed to the Arts Infusion Project when they were in the fourth grade. For example, 71% of fifth grade students who participated in the Arts Infusion Project both as fourth and fifth graders mastered the social studies content; and 90% of those who were in the project as fourth graders, but not fifth graders showed evidence of mastering the fifth grade social studies content.

In contrast to these two groups of students, were those fifth graders who were never involved with the project as fourth graders. The percentage of these students receiving a fourth marking period grade of B or higher was 61% and 53.5% respectively for those who were never in the Arts Infusion Project either as fourth or fifth graders, and those who became involved for the first time in the fifth grade.

*Table 2: Percentage of Fourth Grade Students Mastering Social Studies Content*

Social Studies Fourth Marking Period Grade	Arts Infusion Students	Non-Arts Infusion Students
Less than a <b>"B"</b>	26.6%	34.8%
<b>"B"</b> or higher	73.4%	65.2%
Total Number of students	124	132

*Table 3: Percentage of Fifth Grade Students Mastering Social Studies Content*

Social Studies Fourth Marking Period Grade	Participated in the Arts Infusion Project in the Fourth and Fifth Grade	Participated in the Arts Infusion Project in the fourth grade but <b>not</b> the fifth grade	Participated in the arts infusion project in the fifth grade but <b>not</b> the fourth grade	Has never participated in the arts infusion project
Less than a <b>"B"</b>	29.5%	10.0%	46.5%	39.0%
<b>"B"</b> or higher	70.5%	90.0%	53.5%	61.0%
Total Number of students	78	59	69	86

## Special Populations Mastery of the Social Studies Curriculum

The findings reported in Table 4 indicate that among special education and bilingual students, proportionately more of the students in the Arts Infusion Project mastered the materials in the social studies curriculum than students in the control group. However, the population size for both groups is relatively small; hence some caution must be made in interpreting these results. Among low SES students, slightly more of the students in the control group received a grade of “B” or higher as a final marking period grade. This difference was not however, statistically significant.

*Table 4: Percentage of Special Population Students Mastering Social Studies Content*

Social Studies Fourth Marking Period Grade	Special Education		Bilingual		Low SES	
	Treatment	Control	Treatment	Control	Treatment	Control
Less than a “B”	65%	75%	42%	48%	39%	34%
“B” or higher	35%	25%	58%	52%	61%	66%
Total Number of students	26	16	19	25	220	180

## Arts Infusion and Pro-Cognitive Development

How does involvement in the arts stimulate student behaviors that promote their cognitive growth? We examined several indicators of what we referred to as “pro-cognitive” behaviors; these are behaviors such as completing homework on time and in a satisfactory manner, being attentive during class, volunteering in class, and staying on task, all of which are critical to student’s academic success. Classroom teachers provided feedback on individual student’s improvement in each of these areas. Significant differences were detected among fourth graders in the study. Students who were in the Arts Infusion Project were more likely to have been rated by their teachers as showing improvement in staying on task and volunteering in class than students who were in the control group (See Figures 4 and 5). At the fifth grade, students who were part of the Arts Infusion Project for two years consistently showed the greatest levels of improvement in all pro-cognitive areas than any other group of students. For example, while 9 out of every 10 students who were part of the intervention for two years was rated by their teachers as showing improvement in completing their homework in a satisfactory manner, for other students only 6 out of every ten students were found to have made progress in this area. Additionally, 7 out of every 10 Arts Infusion student with two years of participation in the project tended to complete their homework in a timely manner, compared to 6 out of every 10 students who were not exposed to the project for two year. Similarly, while 8 out of every 10 arts infusion student with two years of involvement in the project improved in their motivation to learn, on average, only 7 out of every 10 students who were not involved in the project for 2 years were rated as having improved in their motivation towards school and learning.

Figure 4: Percentage of Fourth Grade Students Showing Improvement in the Pro-Cognitive Behavior "Volunteering in Class".

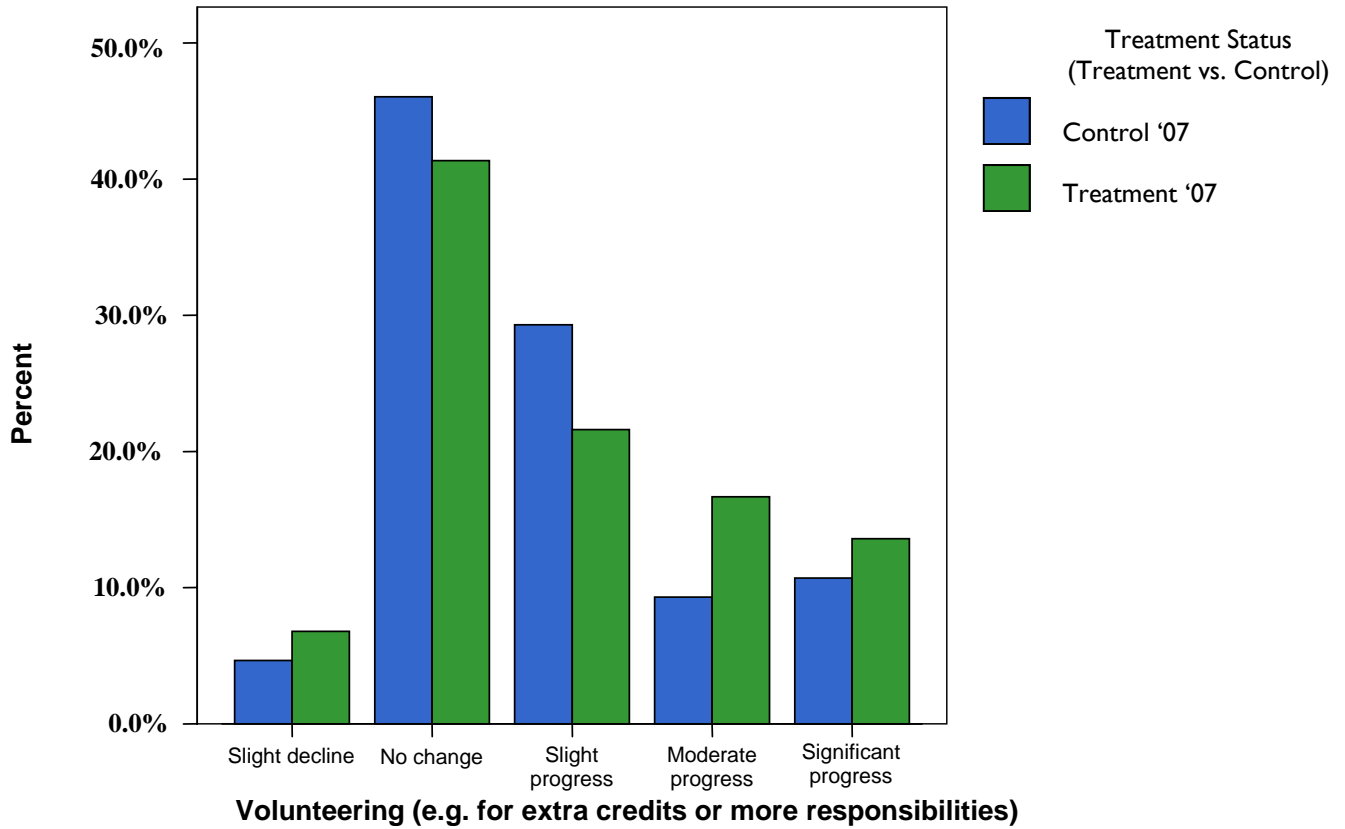
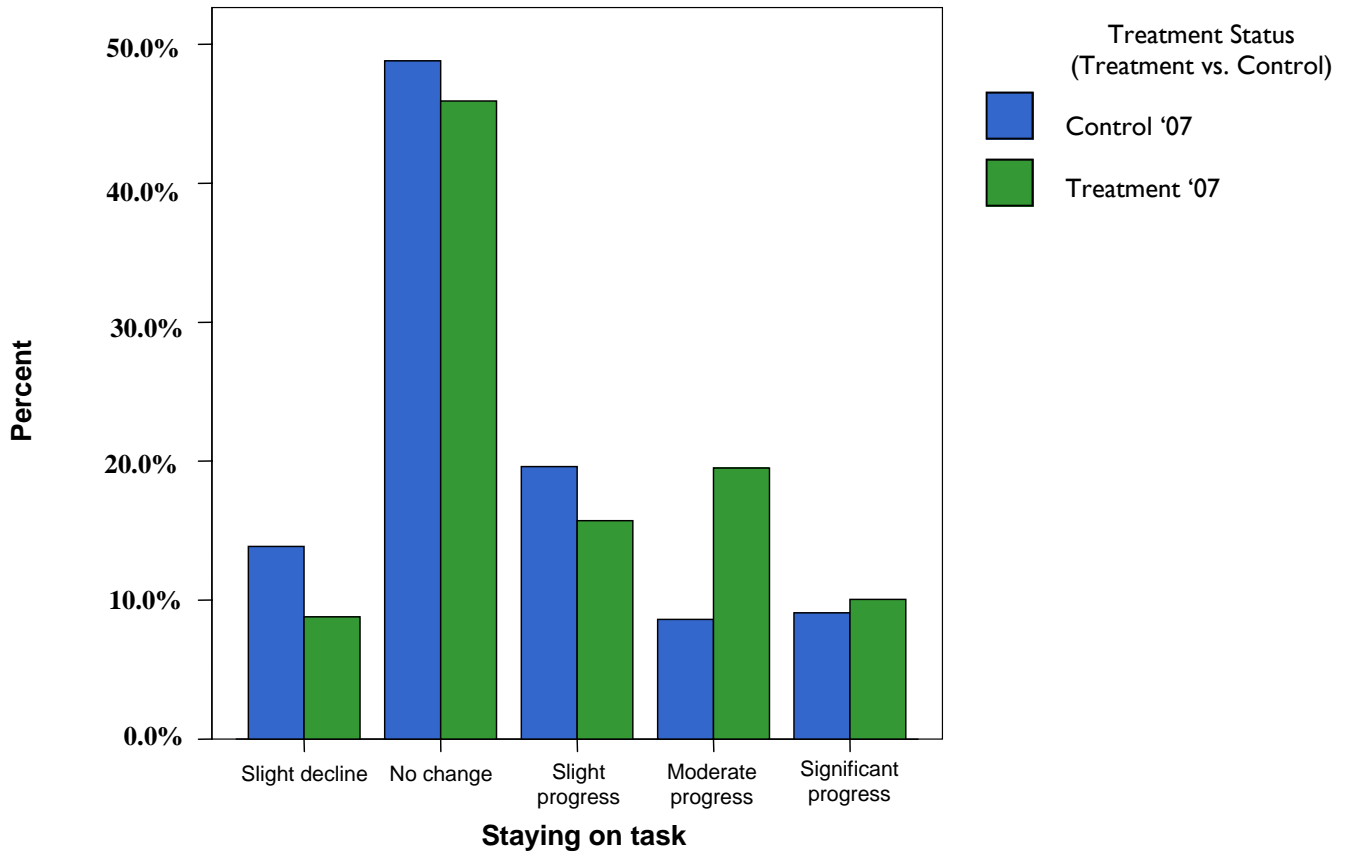


Figure 5: Percentage of Fourth Grade Students Showing Improvement in the Pro-Cognitive Behavior "Staying On Task".





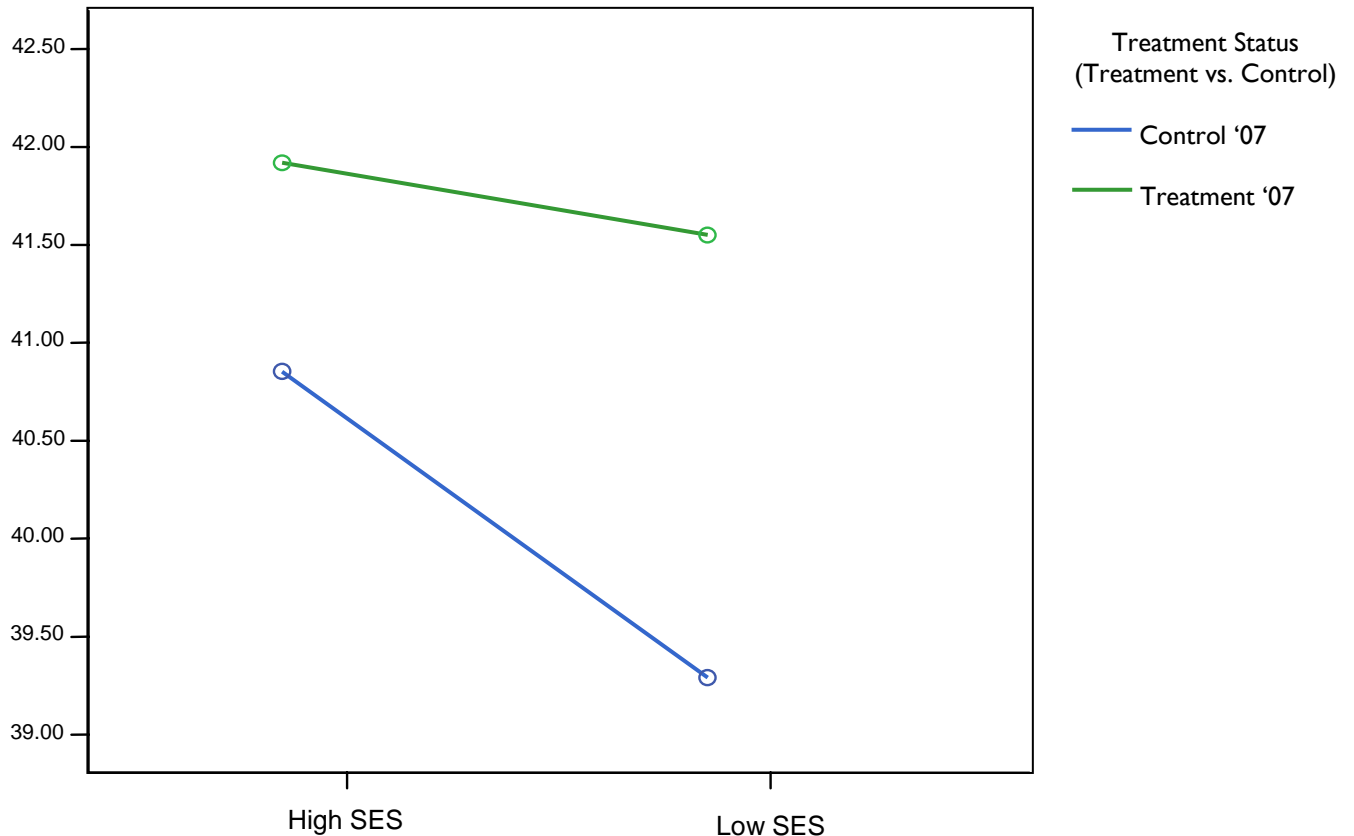
**Initially teachers were leery of the fact that the EAT would be taking up too much classroom time. However, as the first year progressed many teachers wondered why EAT was limited to only 20 lesson plans and could not work with their class each week.**



## Pro-Cognitive Development and Special Populations

A comparison of the overall improvement in pro-cognitive behaviors for subgroups of students based on socio-economic status reveals that the students who derived the greatest benefit from the Arts Infusion Project were those eligible to receive free or reduced lunch. Low SES students in the Arts Infusion Project had an overall mean of 41.62 compared to 39.42 for low SES students who were not in the project. For high SES students, the mean pro-cognitive score was 42.03 as opposed to 40.973 for high SES students in the control group. Figure 6, graphically displays these results, as well as the finding that irrespective of socio-economic status, students in the Arts Infusion Project made greater progress in the pro-cognitive domain than students who were in the control group.

*Figure 6: Pro-cognitive Growth for Students Based on their Socio-Economic Status*



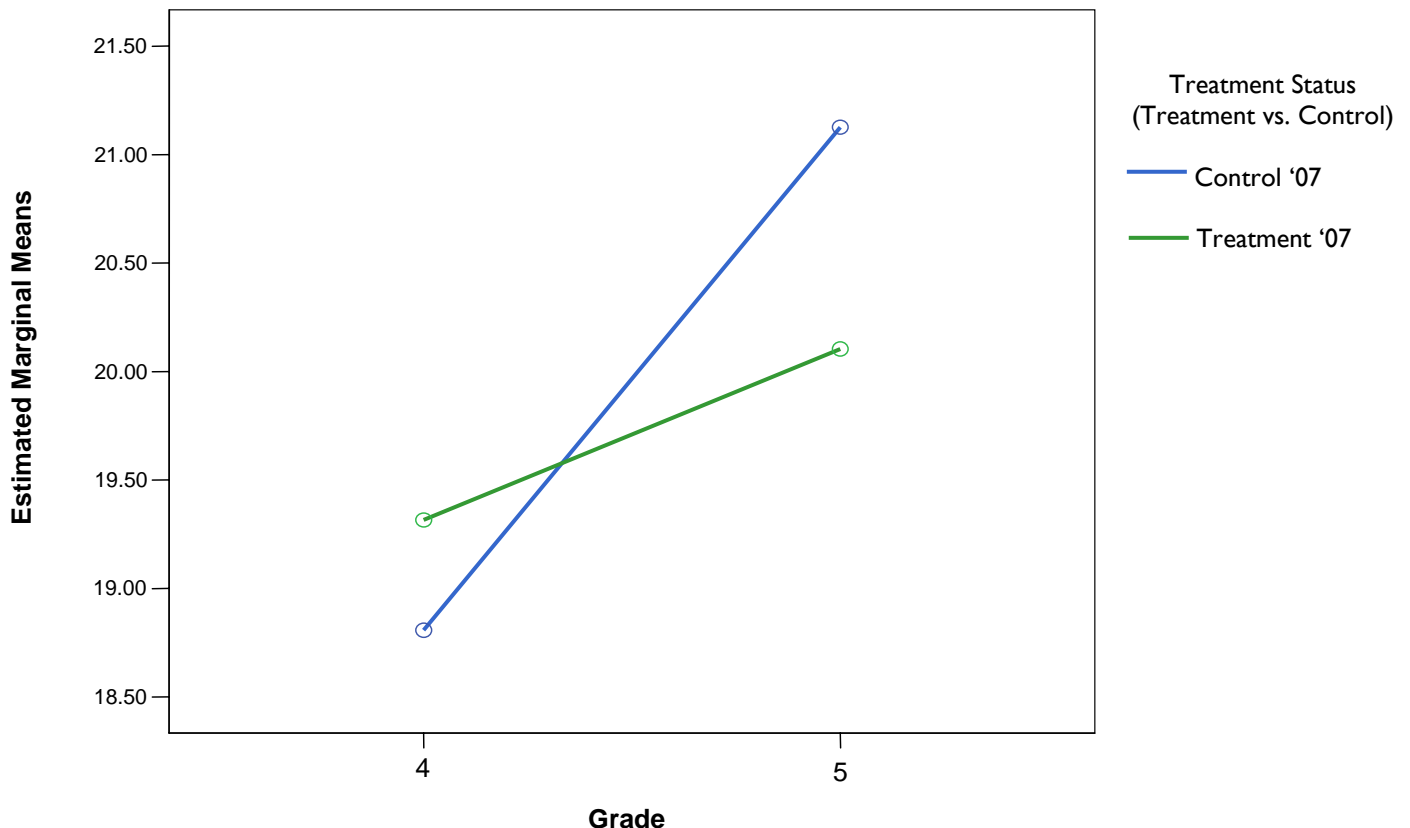
Results for bilingual students reveal that there was a significant difference in progress in the pro-cognitive domain between students in the Arts Infusion Project and control students ( $F=4.213$ ,  $p \leq .044$ ). The average rate of progress across all pro-cognitive behaviors for students in the Arts Infusion Project was 46.24, compared to 40.25 for non-Arts Infusion students. Bilingual students in the Arts Infusion Project made greater progress than bilingual students who were not in the project. No significant differences were detected for special education pupils. Both groups of students had a mean score of 37.0.

## Arts Infusion and Pro-Social Development

Students' pro-social development was taken to indicate the degree to which the arts promote positive interactions among students, lead to improved behaviors in class, attending class regularly and in a timely manner. Our findings indicate that the effect of the program differed for fourth and fifth graders. Among fourth graders, students in the Arts Infusion Project made greater strides in their pro-social growth than students in the control group (See Figure 7). However, at the fifth grade, the result was less clear cut. It appears from the Figure that students not in the project at this grade level made greater strides in their pro-social development than other students. However, when we disaggregated the data for the fifth grade, we discovered that students in the control group who had participated as fourth graders in the Arts Infusion Project showed the most improvement in this domain. In refining the analysis, we compared the pro-social growth of all fifth graders who were in the Arts Infusion Project during the fourth grade with those who were not. The results from this analysis suggested that the former group of students were evaluated by their teachers to have improved more significantly in their pro-social behaviors than students who were not involved as fourth graders in the Arts Infusion Project .

**Among fourth graders, students in the arts intervention project made greater strides in their pro-social growth than students in the control group.**

*Figure 7: Pro-Social Growth of Fourth and Fifth Grade Students*



## Conclusion

The findings presented in this report indicate that the Arts Infusion Project made a significant difference in how well students developed in the academic, pro-cognitive and pro-social domains. Students who were part of the Arts Infusion Project out-performed students who were not involved in the project. Moreover, it was very clear from these results that being exposed to the arts at an earlier age increased the likelihood for improved academic, pro-cognitive and pro-social growth. In addition, the robustness of the arts intervention at the fourth grade had a sustaining impact on student learning and behaviors beyond that grade. An interesting finding in the study is the positive difference that being involved in the Arts Infusion Project made in the learning of low socio-economic status students. These students benefited both academically and non-cognitively from their participation in the project, outperforming their counterparts who were not in the project in all areas.

**The findings presented in this report indicate that the Arts Infusion Project made a significant difference in how well students developed in the academic, pro-cognitive and pro-social domains. Students who were part of the Arts Infusion Project out-performed students who were not involved in the project.**



*4th and 5th Grade Jersey City Public School Treatment teachers at an all day training during Year Two of the project.*

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